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BC 7 Resolution Requirements for Scalar Dissipation Measurements in Turbulent Jets and Flames WILLIAM PITTS, *National Institute of Standards and Technology* Scalar dissipation, defined as twice the product of the molecular diffusion coefficient and the local gradient of the mixture fraction dotted with itself, characterizes molecular mixing rates in turbulent flows and has a central role in turbulent combustion modeling. Experimental measurements require sufficient resolution to ensure that the local scalar gradient is effectively constant in time and space. Traditionally, it was argued that it was necessary to resolve spatial features on the order of size of the Batchelor scale, the product of the Kolmogorov scale and the inverse square root of the Schmidt number, which are typically a few hundred micrometers for laboratory flows. More recently, it has been suggested that the required spatial resolution may be 12-25 times larger than the Batchelor scale. Relaxation of the resolution requirements by such large factors would allow measurements with greatly improved signal-to-noise ratios. Unfortunately, recent experiments, including scalar dissipation measurements along a line in an axisymmetric jet of propane into air at the National Institute of Standards and Technology, have shown that the larger estimates for the required spatial resolution will result in partial averaging of the scalar dissipation. Taken together, the studies suggest that in order to fully capture scalar dissipation fluctuations the spatial resolution must be no larger than 2-3 times the Batchelor scale.